

PRATHAM BOOKS
A Book in Every Child's Hand

From Submarines to Sky Raiders - All about Dragonflies and Damselflies

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Level 4



It is one thing to be charged at by a wild elephant or rhino or buffalo or even a sloth bear. But this! This was ridiculous! Here I was at the Sultanpur National Park near Delhi being repeatedly charged at, by of all things, a dragonfly!

It would come zooming straight at me, stop dead millimeters away from me, hover because I refused to turn tail and flee, turn around, fly off some distance and then come whizzing back again. Its message was clear: you are in my territory and airspace, clear out... or else!



Then some small insect (I couldn't make out what) stupidly flew into the danger zone, and wham! In a trice, the dragonfly had scooped it up in its barbed wire legs, so conveniently thrust forward in a deadly basket like shape and started munching it up, even as it continued to fly up and down as if nothing had happened.

All this made me curious to know more about these fierce raiders of the sky.



What I found out was astonishing. They’ve been around, a long, long time, some 250 to 300 million years - much longer than human beings. They were probably the first insects to fly and the first to hunt in the sky. Their ancestors were monsters – a fossil dragonfly-like insect unearthed from coal seams in France had a wingspan of nearly 70 cm. or 2.5 feet.

They are much smaller today, with a maximum wingspan of 20 cm. (still that’s almost the width of this page!), but basically have remained virtually unchanged for some 150 million years.



About 5000 species have been named around the world (of which, around 500 are found in India) and they've spread virtually everywhere where there is permanent fresh water, except for the polar regions. They prefer the tropics, where it is hot, humid and humming with life.
It is quite easy to tell apart dragonflies from damselflies. Generally, dragons are larger and more robust; they patrol the skies and when at rest, hold their wings perpendicular to their body, which makes them look like vintage airplanes.



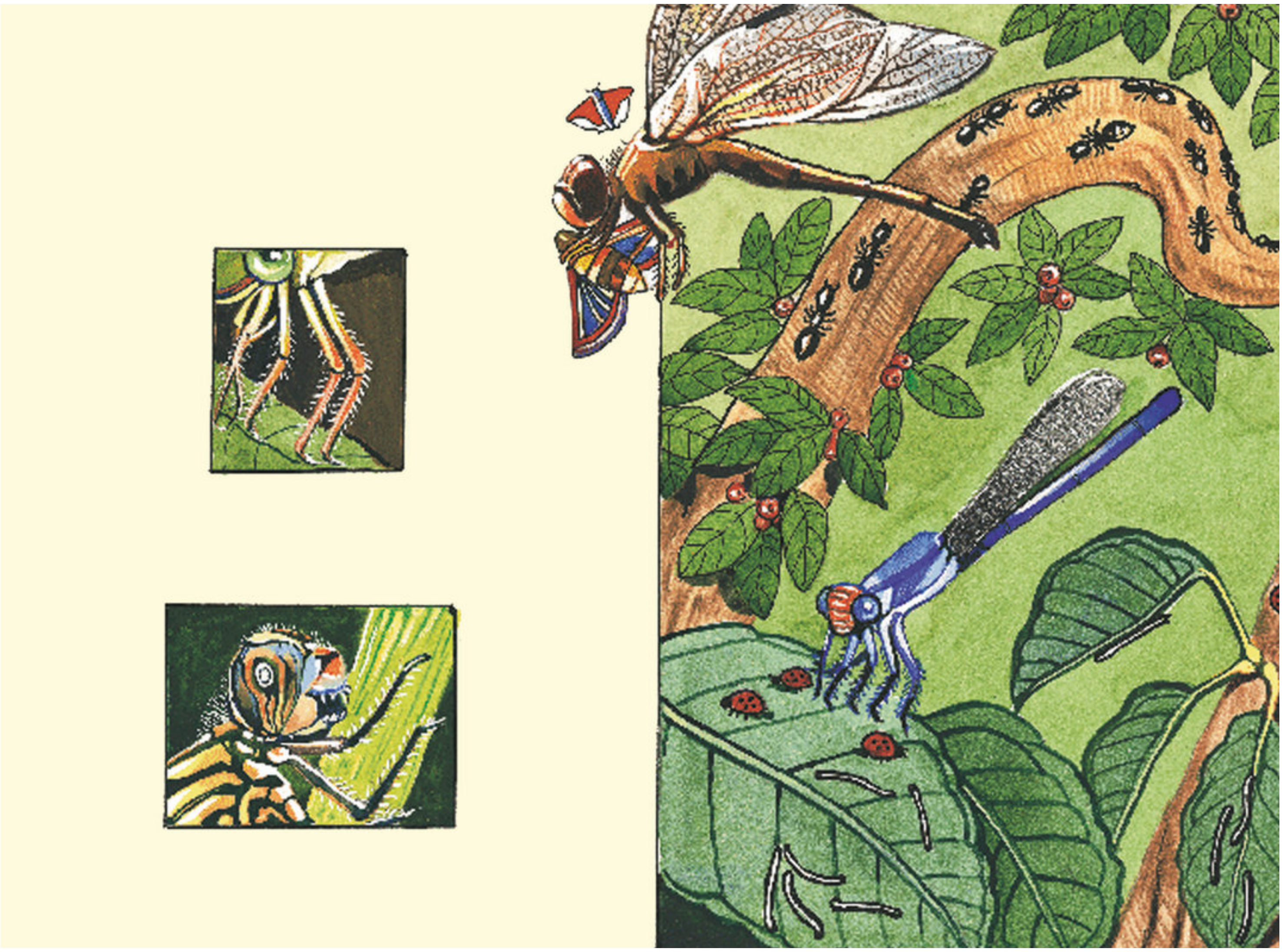
The damsels are (naturally) more delicate; they hover virtually unseen and often beautifully camouflaged, low over the surface of the ponds and streams where they have been born.

And while both are pure carnivores, often those disgraceful dragonflies hunt and eat the damselflies too!



One thing you notice straightaway about dragonflies and damselflies is how different they are from other insects. Their beautiful bulging eyes, their delicate yet strong cellophane like wings, their deadly barbed-wire legs, so good for trapping, so hopeless for walking, and that elongated colourful abdomen, make them unlike anything else in the insect world.

They come in beautiful patterns and colours; midnight and sky blue, magenta, gold, saffron, emerald green, corn yellow, turquoise, fire-engine red and jet black to name just a few. And they are so well equipped and armed for their role as raiders of the sky.

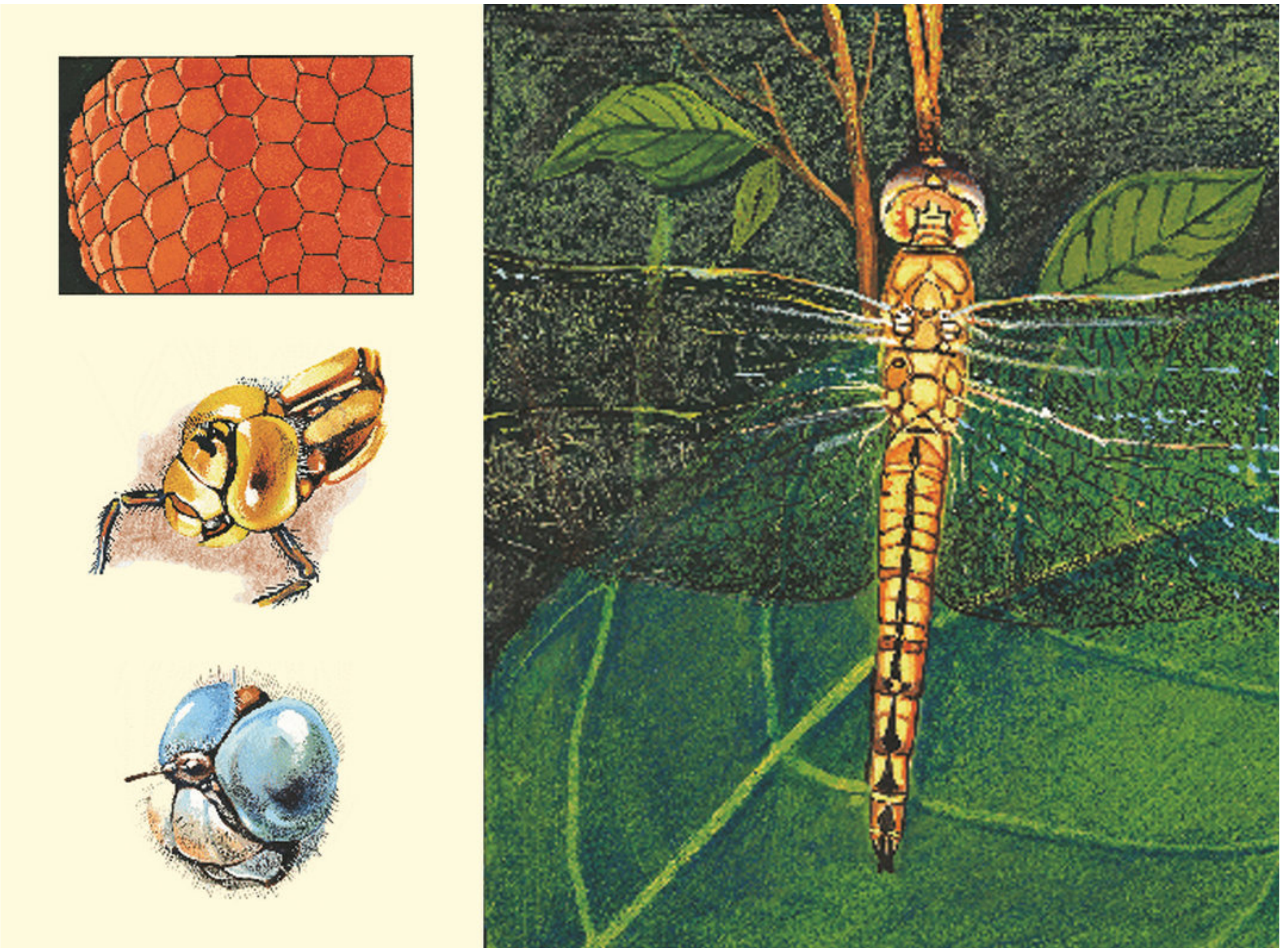


Their legs, strong, slender and barbed are placed well forward, and together with the jaws, form a basket-like deadly trap into which a hapless insect is scooped.

It is then ripped apart by the sharp teeth in the bowl-shaped mouth and munched up even as the insect continues to fly. And as they are energetically flying around nearly all the time, dragonflies are nearly always hungry and so hunting.

They will take wasps, moths, butterflies, grasshoppers, mosquitoes, flies, and smaller members of their own tribe (that maybe the most delicious!). They can eat their own weight in food in half an hour, and one glutton was recorded accounting for 40 flies in just two hours!

Damselflies may take non-moving prey like aphids and small insects on leaves, and I once saw an unfortunate damsel that had tried raiding a spider's web. She was munching a tiny fly-like insect, even while struggling to free herself of the sticky strands of the web, as the spider bided its time.



Ah, and what beautiful eyes they have! All the better to see (and target) you with! It is believed that they have the most perfect eyes in the insect world. Their eyes have two types of lenses; one, which tracks movements, and the other, which makes out shapes. Their ability to twist and turn their head, neck and eyes in nearly every direction, ensures that they miss seeing nothing.

Try creeping close to a dragonfly on its perch and you will realize how alert it is, as its eyes follow your every movement, and the fine sensitive hairs on the joints of its neck, catch the faintest currents of air as you draw close. It'll be off in a trice if it gets alarmed, whirring off on its shimmering wings.



And yes, those delicate cellophane wings, so wonderfully stained with colour, they too are a marvel of natural engineering. They look so frail and easy to tear but really they are tough, flexible and durable.

They ‘switch on’ and start beating automatically the moment the legs leave the ground or perch.

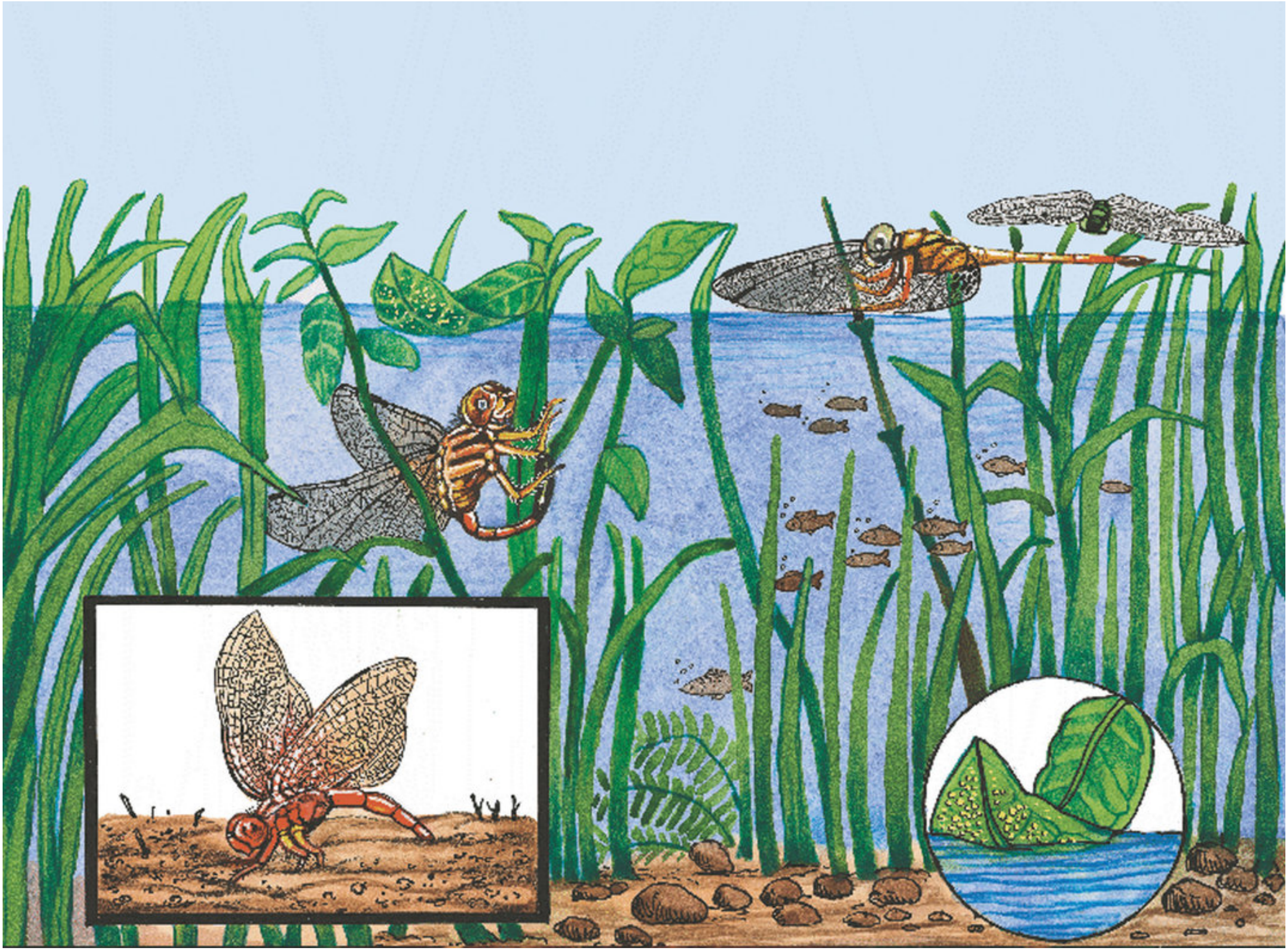


Like most other insects, dragonflies (and damsels too, for that matter!) are no great romantics when it comes to matters of the heart. A male dragonfly in search of a lady love, will first transfer small packets of sperm from his rear end into a small sperm bag – let’s call it skybag - in front of his abdomen.

When he finds a suitable female, he hovers in front of her, his wings glittering and shimmering. Then, using special claspers on the tip of his abdomen, he literally grabs her by the scruff of her neck and flies off, with her hitched to him in tandem.

Then the female curls her own abdomen tip into the male's sperm skybag, thus completing the lovely daisy-chain formation they have become famous for and fertilizing her eggs in the process. They may now rest on a plant or continue to fly thus united.

Now the male will become the gallant hero, and will accompany the female to the place where she will lay her eggs.



Some dragon ladies just scatter their eggs over water (sometimes they mistake shiny tarmac for that) others bury them in sand or soft mud at the edge of the water.

Some will even crawl underwater along a plant stem (the husbands, still attached are dragged under too) and deposit their eggs in soft plant tissue, by cutting into the stem with a special knife-like cutting organ in their abdomen. An envelope of air surrounds the pair while on this vital errand.



Ah, you may well ask, excuse me, but what are these raiders of the sky doing laying their eggs under water? Well, it is time to let you into the biggest secret of their lives: actually, dragonflies and damselflies spend more of their lives terrorizing tadpoles and small fish under water than they do patrolling the skies hunting flies and mosquitoes!



The eggs hatch into what are called ‘nymphs’ or ‘naiads’, but whoever decided to call them that was obviously off his or her rocker because ‘nymph’ makes you think of beautiful maidens, and what emerges from the eggs are certainly not beautiful maidens, but horrors of the deep, that mercilessly hunt small fish and tadpoles!



This ‘nymph’ will change its skin or moult ten or fifteen times in the two or three years it spends underwater (five years for species that live in mountain streams).

It breathes through gills in its rectum (would you like to breathe through your bottom?!) and propels itself by giving itself jet propelled enemas, that is, by squirting jets of water out of its bottom! Way to go, what say!

After two or three years of living like this, it finally readies itself for a career as a hunter in the sky, a career that will last at the most six months.

It spends its last few days as a nymph near the surface of the water and then, finally crawls out and up a convenient twig or stalk, usually in that darkest hour before the dawn. I saw one once, (again at Sultanpur) and at first hadn't the faintest idea what it was. It was a pale, creamy-white colour, its huge bulging eyes were colourless and somewhat dead looking. Its wings were wet and glistening, and it crept tiredly up a gnarled tree trunk.

Then, gradually its eyes got darker as colour suffused into them, and the wings stretched out, as the blood pumped through the fretwork of veins. would take a couple of hours at least, before the insect would be sky-worthy and ready to make its first kill.



Deadly as these insects are, they too have their enemies. Bigger fish and other underwater creatures regularly eat the fearsome nymphs.

Birds hunt dragonflies tirelessly, and I’ve often watched bee-eaters snap them up, high up in the sky. It is amazing to see how dexterously they catch them and then bash them up on twigs and posts to make them less spiky to swallow! On the island of Bali, they are fried and served up as a crisp snack though I haven’t sampled that as yet!



They are useful to us in other ways too. Some dragonflies are great pest controllers, as they hunt down flies and mosquitoes that pester us. They have even been called ‘mosquito hawks’ for this reason. Others are good indicators of the healthy or poor condition of water bodies, like lakes and ponds and marshes.

While some species can live in very dirty water (and their presence or sudden appearance in a water body will immediately tell you that the water here is polluted), others can tolerate only clean water and their presence means the water is good and pure.



In the past, various nasty names and habits were ascribed to dragonflies: they were called the ‘devil’s darning needles’ and were believed to sew up the mouths of little children. (They are utterly harmless and neither sting nor bite, nor tear you apart, unless you’re a nasty little bluebottle!) They were also called ‘horse stingers’ because they were always found flying around horses.



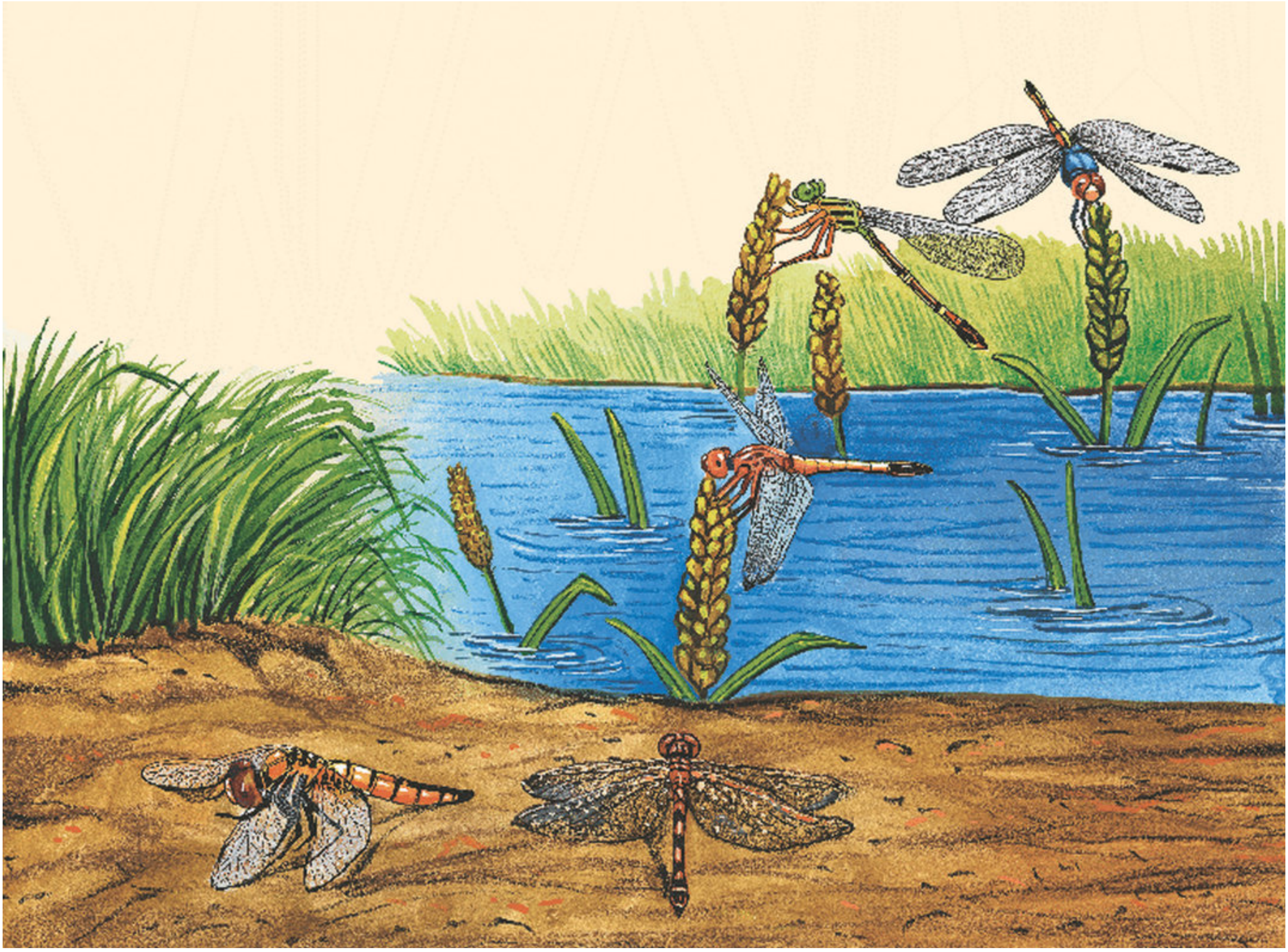
Actually, closer observation would have revealed that the insects were actually hunting horseflies that made the lives of horses miserable, and so were doing them a service. Children all around the world have often caught them and ‘flown’ them on lengths of string, which is not at all a nice thing to do. Some people have been kinder.

They have always been admired and revered in Japan. In fact, an old name for Japan was ‘Akitsu-shimu’ meaning ‘Dragonfly Island’, which is really lovely.



In the olden days, Japanese farmers believed that the dragonfly was the spirit of the rice plant – its presence indicated a good rice harvest. The dragonfly even became the emblem of the Emperor.

A good time to set out in search of dragonflies is early in the morning, when it is still cool or chilly. Dragonflies and damselflies need the sun to give them energy and they’re quite inactive before this happens.



You can creep up real close to them now and admire them to your heart’s content: those great bulbous jewel eyes, the razor-wire legs, the glassy wings and colourful body without much fear of them taking off.

In India, the best season to watch dragonflies is just before and after the monsoons, when they are at their most profuse. Whenever and wherever you do so, one thing is certain: you cannot but be bedazzled by these classy hunters of the skies as they zither to and fro, waiting, just waiting to ambush an unfortunate victim that flies into their airspace.



Dragonfly Facts

Dragonflies and damselflies belong in the scientific order, ‘Odonata’ which means the ‘toothed ones’.

Dragonfly nymphs have been divided into three types. The ‘climbers’ are streamlined stalkers that live in submerged vegetation; the ‘sprawlers’ wait in ambush in the mud and debris at the bottom and the ‘burrowers’ go one step further and bury themselves in the mud.

They may change their skins or moult, ten or fifteen times in the two or three years they spend underwater.

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'From Submarines to Sky Raiders' has been published on StoryWeaver by Pratham Books.The development of this book has been supported by Rajiv Gandhi Foundation. www.prathambooks.org

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From Submarines to Sky Raiders - All about Dragonflies and Damselflies
(English)

Dragonflies have been on the earth much before human beings appeared! Read this account of their incredible life cycle in Ranjit Lal's effervescent style. Sanjay Sarkar's expert brush comes up with illustrations to match!

This is a Level 4 book for children who can read fluently and with confidence.